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EXAMINER	
ZHONG, CHAD	
ART UNIT	**PAPER NUMBER**
2152	

DATE MAILED: 04/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/939,558	YIM, UI-SUK	
	Examiner	Art Unit	
	Chad Zhong	2154	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 August 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-28 are presented for examination.

2. It is noted that although the present application does contain line numbers in specification and claims, the line numbers in the claims do not correspond to the preferred format. The preferred format is to number each line of every claim, with each claim beginning with line 1. For ease of reference by both the Examiner and Applicant all future correspondence should include the recommended line numbering.

3. Applicant is required to update the status (pending, allowed, etc.) of all parent priority applications in the first line of the specification. The status of all citations of US filed applications in the specification should also be updated where appropriate.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371 (c) of this title before the invention thereof by the applicant for patent.

5. Claims 1-5, 8-9, 13, 15-20, 23-26, 28 are rejected under 35 U.S.C. 102(e) as being anticipated by Irish, US 6,757,281.

6. As per claim 1, Irish teaches a communication method among a plurality of virtual local area networks (VLANs), each VLAN having a number of hosts, comprising:

broadcasting a first address resolution protocol (ARP) request (Col. 2, lines 35-40, wherein the broadcast messages utilized for the present invention are ARP requests) packet transmitted from a source

host of the number of hosts to a source VLAN of the plurality of VLANs (Col. 8, lines 12-23; Fig 1, wherein the router server item 1010 performs address resolution between different networks and VLANs);

transmitting a first ARP response packet, responding to the first ARP request packet, to the source host and broadcasting a second ARP request packet to a destination VLAN of the plurality of VLANs in which a destination host addressed by the first ARP request packet is included (Col. 7, lines 32-50; Col. 8, lines 12-22, wherein the broadcast reply resolution is within the same VLAN and broadcasted within the same VLAN); and

receiving a second ARP response packet from the destination host (see for example, Col. 8, lines 13-20, wherein the router server is broadcasting remotely in order to obtain address information of the destination node, in response to this broadcast, the destination nodes responds).

transmitting a unicast packet originating from the source host to the destination host using a media access control (MAC) address of the destination host that is included in the received second ARP response packet (see for example, Col. 8, lines 12-49, wherein the unicast by definition is a point to point transmission of data between a single client and server, upon the discovery of destination MAC address as supplied by the second ARP request, the host now equipped with the destination MAC no longer need to go through the ARP phases, the host would proceed to transmit plurality of packets to the destination via point to point access, the above is a description of Fig 2, items 2030, 2040, 2050, 2060, 2070, and 2080).

7. As per claim 2, Irish teaches the communication method of claim 1, wherein the plurality of VLANs belong to the same Internet Protocol (IP) subnet, and the method further comprises configuring the plurality of VLANs by configuring a MAC table and a routing table so that the plurality of VLANs are allocated to the same IP subnet, a plurality of ports of a switching router are allocated to the plurality of VLANs, and the respective number of hosts included in each of the plurality of VLANs are mapped to the corresponding allocated plurality of ports (Col. 8, lines 13-49; Fig 1, wherein the switch router

contains routing tables and port information, proper mapping connection is expected upon discovery of destination host. During this sample section, we can see that the address map of corresponding destination client is being updated on the switch router).

8. As per claim 3, Irish teaches the communication method of claim 1, wherein broadcasting the first ARP request packet to the VLAN in which the source host is included, further comprises:

identifying the source VLAN, based on a MAC source address included in the first ARP request packet (Col. 7, lines 30-50); and

broadcasting the first ARP request packet to a number of source ports of a switching router, which are allocated to the source VLAN (Col. 7, lines 30-50).

9. As per claim 4, Irish teaches the communication method of claim 3, wherein the number of source ports is variably determined in accordance with the number of hosts connected to one VLAN of the plurality of VLANs (Fig 1, wherein each subnetwork can be configured as a VLAN).

10. As per claim 5, Irish teaches the communication method of claim 1, wherein broadcasting the second ARP request packet further comprises:

generating the first ARP response packet in response to the first ARP request packet (wherein the ARP inherently teaches of generating request after receiving the boardcast messages);

transmitting the generated first ARP response packet to the source host (Col. 7, lines 30-56);

generating the second ARP request packet for finding out the MAC address of the destination host identified by the first ARP request packet (wherein the 2nd ARP request is used for remote VLAN address resolution);

identifying the destination VLAN in which the destination host is included (Col. 8, lines 10-24); and

broadcasting the second ARP request packet to all destination ports of a plurality of switching router

ports allocated to the destination VLAN (Col. 8, lines 13-22).

11. As per claim 8, Irish teaches the communication method of claim 5, wherein identifying the destination VLAN in which the destination host is included further comprises:

reading an IP address of the destination host from the first ARP request packet;

identifying a source port, of a switching router, mapped on the IP address of the destination host; and

identifying the source port allocated to the source VLAN (Fig 1; Col. 7, lines 30-50; Col. 8, lines 12-25, wherein the switch router would have the proper port information for the host and the IP address of destination, because upon discovery of appropriate destination node, the system would no longer be in boardcast mode and would be source to destination type unicast environment).

12. As per claim 9, Irish teaches the communication method of claim 1, wherein transmitting the unicast packet to the destination host further comprises:

receiving the second ARP response packet from the destination host;

storing the MAC address of the destination host included in the received second ARP response packet;

receiving a first unicast packet from the source host; and

generating a second unicast packet based on the first unicast packet and transmitting the second unicast packet to the destination host (Col. 8, lines 12-50).

13. As per claim 13, claims 13 is rejected for the same reasons as rejection to claim 1 above.

14. As per claim 15, Irish teaches a communication method among a plurality of virtual local area networks (VLANs) in the same Internet protocol (IP) subnet, comprising:

broadcasting an address resolution protocol (ARP) request packet to communicate with a destination host that belongs to the same IP subnet as a source host, but belongs to a different VLAN of the plurality

of VLANs than the source host (Col. 7, lines 31-50; Col. 8, lines 10-23);

informing the source host of a media access control (MAC) address of a switching router, using a communication from the switching router provided in response to the ARP request packet (see for example, Col. 7, lines 40-55);

obtaining the MAC address of the destination host by broadcasting the ARP request packet from the switching router to a second VLAN of the plurality of VLANs, in which the destination host is included (Col. 8, lines 1-24);

transmitting to the switching router a first data packet to be transmitted to the destination host by the source host, via the switching router (Col. 8, lines 30-50); and

transmitting the received first data packet from the switching router to the destination host using the MAC address of the destination host (Col. 8, lines 30-50, wherein the MAC address is encapsulated from one hop to the next hop on the data network).

15. As per claim 16, Irish teaches the communication method of claim 15, further comprising:

transmitting to the switching router a second data packet to be transmitted to the source host from the destination host, via the switching router (Col. 8, lines 30-50); and

transmitting the second data packet from the switching router to the source host using the MAC address of the source host (Col. 8, lines 30-50, wherein the transmission of data packets are bi-directional, and in accordance of Fig 1, the switching router is in the way of source and destination node, thus, encapsulation between two nodes on the network is a must on a hop by hop basis).

16. As per claim 17, Irish teaches the communication method of claim 15, wherein the source host knows the MAC address of a corresponding port of the switching router to which the source host is connected, but does not know the MAC address of the destination host (Fig 1, Fig 2, item 2030).

17. As per claim 18, Irish teaches the communication method of claim 15, wherein the destination host knows the MAC address of a corresponding port of the switching router to which the destination host is connected, but does not know the MAC address of the source host (Fig 1; Fig 2, item 2030).

18. As per claim 19, claims 19 is rejected for the same reasons as rejection to claim 1 and 16 above.

19. As per claim 20, claim 20 is rejected for the same reasons as rejection to combination of claims 1 and 3 above.

20. As per claim 23, Irish teaches the communication method of claim 21, wherein:

the plurality of networks include multiple virtual local area networks (Fig 1);

the subnet is an Internet Protocol (IP) subnet;

the first ARP request comprises a destination address field identifying a media access control (MAC) address of the global destination address, a source address field identifying the MAC address of the source host, a destination IP address field identifying an IP address of the destination host, and a source IP field identifying the IP address of the source host (Col. 7, lines 32-50; Col. 8, lines 12-50). .

21. As per claim 24, Irish teaches the communication method of claim 21, wherein:

the plurality of networks include multiple virtual local area networks;

the subnet is an Internet Protocol (IP) subnet;

the first ARP response comprises a destination address field identifying a media access control (MAC) address of the source host, a source address field identifying the MAC address of the intermediary device's first intermediate address, a destination IP address field identifying an IP address of the source host, and a source IP field identifying the IP address of the destination host (Col. 7, lines 32-50; Col. 8, lines 12-50).

22. As per claim 25, Irish teaches the communication method of claim 22, wherein:

the plurality of networks include multiple virtual local area networks;

the subnet is an Internet Protocol (IP) subnet;

the second ARP request comprises a destination address field identifying a media access control (MAC) address of the global destination address, a source address field identifying the MAC address of the intermediary device's second intermediate address, a destination IP address field identifying an IP address of the destination host, and a source IP field identifying the IP address of the source host (Col. 8, lines 12-50).

23. As per claim 26, Irish teaches the communication method of claim 22, wherein:

the plurality of networks include multiple virtual local area networks;

the subnet is an Internet Protocol (IP) subnet;

the second ARP response comprises a destination address field identifying a media access control (MAC) address of the intermediary device's second intermediate address, a source address field identifying the MAC address of the destination host, a destination IP address field identifying an IP address of the source host, and a source IP field identifying the IP address of the destination host (Col. 8, lines 12-50).

24. As per claim 28, claim 28 is rejected for the same reasons as rejection to claim 1 and 15 above.

Claim Rejections - 35 USC § 103

25. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

26. Claims 6-7, 10, 11, 12, 14, 21-22, 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Irish, US 6,757,281, in view of Rodrig et al. (hereinafter Rodrig), US 6,256,314.

27. As per claim 6, Irish does not explicitly teach teaches the communication method of claim 1, wherein the first ARP response packet comprises a destination address (DA) field representing the MAC address of the source host, a source address (SA) field representing the MAC address of a source port, of a switching router, mapped on the source host, a destination IP address (DI) field representing an IP address of the source host, and a source IP address (SI) field representing the IP address of the destination host

28. Rodrig teaches

wherein the first ARP response packet comprises a destination address (DA) field representing the MAC address of the source host, a source address (SA) field representing the MAC address of a source port, of a switching router, mapped on the source host, a destination IP address (DI) field representing an IP address of the source host, and a source IP address (SI) field representing the IP address of the destination host (see for example, Col. 14, lines 25-40; Col. 16, lines 30-42, wherein Rodrig's system can learn the incoming requests in a plurality of configurations, furthermore, Rodrig teaches the notion of forwarding requests. In a forwarding system, the switch/router acts as middle relays, the source and destination IP addresses are the actual source and IP addresses of the sender and receiver respectively, and the MAC address changes as router server places its own MAC address within the request, "The switch writes its own MAC address in the source MAC address field of the packet", it is well known in the art that in network communication the source and destination MAC address is known, however in the case of ARP requests, the destination ARP is not known, in Rodrig, the switch/router is capable of handling ARP requests and make a determination or to learn the communication path, Col. 9, lines 4-22. Thus, ARP configuration of claim 6 is taught by Rodrig's system for the advantage of learning network topology in

order to improve speed).

29. It would have been obvious to one of ordinary skill in this art at the time of invention was made to combine the teaching of Irish and Rodrig because they both deal with switch router architecture. Furthermore, the teaching of Rodrig to allow

wherein the first ARP response packet comprises a destination address (DA) field representing the MAC address of the source host, a source address (SA) field representing the MAC address of a source port, of a switching router, mapped on the source host, a destination IP address (DI) field representing an IP address of the source host, and a source IP address (SI) field representing the IP address of the destination host

would improve the latency and intelligence for Irish's system by learning the network's topology by studying incoming message fields.

30. As per claim 7, Irish does not explicitly teach the communication method of claim 1, wherein the second ARP request packet comprises a destination address (DA) field representing a broadcast MAC address, a source address (SA) field representing the MAC address of a source port, of a switching router, mapped on the destination host, a destination IP address (DI) field representing an IP address of the destination host, and a source IP address (SI) field representing the IP address of the source host.

31. Rodrig teaches

wherein the second ARP request packet comprises a destination address (DA) field representing a broadcast MAC address, a source address (SA) field representing the MAC address of a source port, of a switching router, mapped on the destination host, a destination IP address (DI) field representing an IP address of the destination host, and a source IP address (SI) field representing the IP address of the source host (As per claim 6, we realize the switch router of Rodrig has the capability of forwarding and learning

messages, the IP addresses of source and destination will not be discussed here further. The ARP request would continue to the appropriate VLAN in an attempt to retrieve the proper destination MAC address in order to conduct unicast communications. The notion of changing SA address is changed to the switch router is taught by Rodrig, Col. 14, line 30-33, for the advantage of learning).

32. It would have been obvious to one of ordinary skill in this art at the time of invention was made to combine the teaching of Irish and Rodrig because they both deal with switch router architecture. Furthermore, the teaching of Rodrig to allow

wherein the

second ARP request packet comprises a destination address (DA) field representing a broadcast MAC address, a source address (SA) field representing the MAC address of a source port, of a switching router, mapped on the destination host, a destination IP address (DI) field representing an IP address of the destination host, and a source IP address (SI) field representing the IP address of the source host.

would improve the latency and intelligence for Irish's system by learning the network's topology by studying incoming message fields.

33. As per claim 10, claim 10 is rejected for the same reasons as rejection to combination of claims 6 and 7 above.

34. As per claim 11-12, claims 11-12 are rejected for the same reasons as rejection to combination of claims 6 and 7 above.

35. As per claim 14, claim 14 is rejected for the same reasons as rejection to claims 6 above.

36. As per claim 21-22, claims 21-22 are rejected for the same reasons as rejection to combination of claims 5, 6 and 7 above.

37. As per claim 27, claim 27 is rejected for the same reasons as rejection to combination of claims 6-7 above.

Conclusion

38. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following patents and publications are cited to further show the state of the art with respect to "COMMUNICATION METHOD AMONG A PLURALITY OF VIRTUAL LANS IN AN IP SUBNET".

i.	US 6711171	Dobbins et al.
ii.	US 6763023	Gleeson et al.
iii.	US 6789118	Rao

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chad Zhong whose telephone number is (571)272-3946. The examiner can normally be reached on M-F 7:15 to 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, BURGESS, GLENTON B can be reached on (571)272-3949. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

CZ
November 1, 2004

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